

## NEW NORTH AMERICAN FUNGUS GNATS (MYCETOPHILIDÆ)

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Fifteen undescribed species of fungus gnats were found, while working over some material in the insect collection of Cornell University, as well as new locality records for six others. As thirteen new species of the genus *Bolitophila* have been described since Johannsen's key to the genus appeared in 1909 (Maine Agr. Exp. Sta. Bull. 172) and two more species are described in this paper it seems well to include a key to the species of that genus. Eight new eastern species of the genus *Mycomyia* are described in this paper and a key to these is therefore included. The key to the genus *Bolitophila* includes all the North American forms; the western forms are inserted on the basis of the original descriptions except for *B. bilobata*, *B. subteresa*, and *B. perlata* for which paratype material was available. The key to the genus *Mycomyia* includes only the species of the Atlantic states; western forms are omitted because of lack of material.

I wish to express my thanks to Mr. Frank R. Shaw for his generous loan of specimens; among them the paratypes mentioned above, and also for the specimens upon which the new record of *Bolitophila perlata* and the description of *Mycomyia dentata* are based. He has also looked over many of the new species described here, but for any errors he is in no way responsible.

### KEY TO MALES OF THE GENUS BOLITOPHILA OF NORTH AMERICA

1. Vein $R_4$ ending in C .....	2
Vein $R_4$ ending in $R_1$ .....	11
2. Petiole of $Cu$ atrophied at base .....	3
Vein $Cu_1$ atrophied at base .....	<i>disjuncta</i> Loew
Petiole of $Cu$ and $Cu_1$ not atrophied at their bases .....	4
3. Styles with tips "spoon-shaped with the tip chitinized" ( <i>i.e.</i> , sclerotized).	
.....	<i>clavata</i> Garrett
Styles with tips bifid .....	<i>recurva</i> Gar.
4. $Cu_2$ joins the anal vein near its distal end .....	5
$Cu_2$ does not join the anal .....	6

5. Styles "small, tips bifid, about equal in length".....*connectans* Gar.  
 Styles not bifid .....*alberta* n. sp.
6. Styles with the inner tip ending in a sclerotized point .....*acuta* Gar.  
 Styles not so .....7
7. Sc ends proximad of the base of  $R_s$  ..... 8  
 Sc ends distad of the base of  $R_s$  ..... 9
8. Thorax light in color .....*distus* n. sp.  
 Thorax dark in color .....*motana* Cog.
9. Stigma subobsolete; styles "oval with a nose-shaped inner lobe below the middle directed inwards" .....*bilobata* Gar.  
 Stigma brown; styles not as above .....10
10. Styles "sausage-like with the tip constructed smaller, this smaller part ending in two tips" .....*subteresa* Gar.  
 Styles broad ending in two diverging tips .....*hybrida* Meig.
11.  $Cu_1$  arises apparently at M either by the fusion with M or by the reduction of the m-cu cross-vein .....12  
 $Cu_1$  arises below M; m-cu cross-vein distinct .....16
12.  $Cu_1$  fused with M;  $R_4$  straight .....13  
 $Cu_1$  arises at M; m-cu cross-vein being greatly reduced .....14
13. Subobsolete stigma .....*atlantica* Fisher  
 Stigma brown .....*dubiosa* Van Duzee
14. Styles "scoop-shaped (tips truncate with one corner ending in a chiton point" .....*duplus* Gar.  
 Styles "long, base narrow, tip wider and bifid, outer branch short, inner longer and directed in and upwards" .....*patulosa* Gar.  
 Styles not so .....15
15. Styles without teeth .....*cinerea* Meig.  
 Styles with a subterminal ventral knob, and two terminal dorsal teeth.  
*perlata* Gar.  
 (Eastern form)
16. Styles "areuate, the chitin tips spiral, appearing bifid, with two strong teeth, unique form" .....*perlata* Gar.  
 (Western form)  
 Styles "round tapering to a narrow tip shape, the rim chitinized and with two or three black chitin points directed inwards and bristly hairs" .....*raca* Gar.  
 Styles with an inner sclerotized blade at tip; dorsal edge of the zygosternum with a mesally projecting lobe .....*cinerea* Meig.  
 Styles "short dorsally, the base thick, outwardly about halfway straight, then angling to the inner tip. The top truncate" .....*simplex* Gar.

### *Bolitophila acuta* Garrett

A male and a female taken at Coy Glen, New York, May 26, 1934, I place as belonging to this species. This form has hitherto only been recorded from British Columbia. Hypopygium as in figure 3.

***Bolitophila perlata* Garrett**

This species has been taken in the East by C. P. Alexander on the Gaspé peninsula and in Connecticut. The eastern forms have a shorter m-cu cross-vein; the structure of the hypopygium is like that of a western paratype.

***Bolitophila alberta* new species.**

MALE. Length 5 mm. Antennæ fuscous; scape and basal joint of flagellum except its extreme distal end yellow; longer than the head and thorax. Palpi fuscous. Thorax light brown; mesonotum vittate; pleura darkest on anepisternites, sternopleurites, and pteropleurites; scutellum and postnotum dark. Abdomen brown; darkest on the tergites of the first and eighth segments and the posterior margins of segments four, five, six, and seven. Coxæ, trochanters, and femora yellow; tibiæ and tarsi subfuscous; fore tibiæ .94 as long as the fore basitarsi. Wings cinereous tinged; veins brown; pale subobsolescent stigma; Sc enters C distad of midway between the humeral cross-vein and the base of  $R_s$ ;  $R_4$  is straight and ends in C; base of  $R_s$  longer than r-m; petiole of M slightly shorter than the base of  $R_s$ ; m-cu cross-vein is obsolete;  $Cu_2$  curves to join the 2nd anal near its tip. Wing as long as body. Hypopygium as in figure 2.

One male taken at Jasper, Alberta, August 15, 1934. Type (No. 1406) in the Cornell University Collection. This male differs from the male of *Bolitophila montana* Coq. from Ithaca, New York, in the Johannsen collection in having the base of  $R_s$  longer, in having  $Cu_2$  curved towards the tip of the 2nd anal, but not fused with it, and in having  $R_4$  slightly oblique.

***Bolitophila distus* new species.**

MALE. Length 5 mm. Antennæ fuscous; scape and basal flagellar joints yellow; palpi yellow. Thorax yellow; mesonotum with a subobsolete brown vitta on each side. Abdomen brown becoming darker distally. Coxæ, trochanters, and femora yellow; tibiæ and tarsi subfuscous; fore tibiæ .88 as long as the fore basitarsi. Wings hyaline; veins brown; pale subobsolescent stigma; Sc enters C slightly proximad of the base of  $R_s$ ; m-cu cross-vein very short and thick almost obsolete;  $R_4$  ends in C;  $Cu_2$  curves towards the 2nd anal but enters the wing border the length of the petiole of M from the tip of the 2nd anal. Hypopygium as in figure 1.

One male taken at Old Forge, New York, July 20, 1905. Type (No. 1407) in the Cornell University Collection. Close to *B. montana* but differs in the structure of the hypopygium and in color.

**Platyura pellita** new species.

MALE. Length 4.5 mm. Head fuscous; vertex black; face, mouth parts, palpi, scape, base of first flagellar joint and the ventral half of the first and second flagellar joints yellow; antennæ not compressed. Thorax yellow; mesonotum slightly infuscated mesad; prothorax with black setæ; mesopleura and metapleura bare; first thoracic spiracle with about five hairs on its posterior margin. Legs yellow with black hairs; fore tibiæ longer than the fore basitarsi; distal end of the fore tibiæ with an area of minute reddish brown setæ so closely set together as to appear furry. Wings hyaline; tips very slightly infuscated; Sc ends before the origin of  $R_s$ ;  $R_{2+3}$  slightly oblique, ending in C slightly more than its own length beyond  $R_1$ ; coalesced part of M a little over half as long as the petiole of M; anal vein reaches the margin. Halteres yellow with one strong seta at the base of each. Abdomen yellow except the brown basal half of each tergite. Hypopygium as in figure 11.

Type from N. E. Margaree, Cape Breton I., Nova Scotia, Sept., 1935. Paratype Ithaca, New York, Sept. 5, 1922. Type (No. 1420) in the Cornell University Collection; paratype in my collection.

This species runs to *Platyura setiger* in Johannsen's key (Maine Bull. 172) but differs greatly in coloration and in hypopygium.

**Neoempheria digitalis** new species.

MALE. Length 5.5 mm. Robust. Head yellow; antennæ yellow, flagellum darker apically; ocellar spot and palpi black. Thorax mainly yellow; mesonotum darker; pleurotergites slightly infuscated; prothorax with six prominent setæ; anepisternites, pteropleurites and pleurotergites bare; mesonotum with strong setæ, more conspicuous at the base of the wings; setæ in rows on the dorsum; scutellum with two very strong setæ. Wings hyaline; apex with a brown cloud extending from the tip of  $R_1$  to the tip of  $Cu_1$ ; spot behind  $Cu_2$ ;  $Sc_2$  and base of small cell  $R_1$  with spot; Sc ends in C over the middle of cell  $R_1$ ; cell  $R_1$  a little less than three times as long as broad; petiole of M about half as long as  $M_1$ ; Cu forks just proximad of the r-m cross-vein; C produced just slightly beyond  $R_s$ . Halteres yellow. Abdomen mainly yellow; hind margin of the first tergite dark; third tergite with two dark spots on the hind margin; fourth, fifth, and sixth tergites with basal spots that extend caudad along the median line; fifth also with lateral black spots; seventh tergite infuscated except its yellow base; venter yellow. Hypopygium (figure 18) yellow; its digit-like spines black.

Type from Douglas Lake, Mich., August 12, 1922. This species runs to *N. macularis* Joh. in Johannsen's key (Maine Bull. 180). *N. digitalis* is larger; differs greatly in its hypopygial structure from *N. macularis*; cell  $R_1$  is not entirely covered by a spot; and the palpi are black.

A female from Douglas Lake, Mich., is similar to the male except it is about 6.5 mm. in length; has a differently colored abdomen with the dorsum of the first tergite, the hind margins of the second and third, all of the fourth segment except the base, and the remaining tergite dark; venter yellow.

Type (No. 1418) and allotype in the Cornell University Collection.

KEY TO THE MALES OF THE GENUS MYCOMYIA OF THE ATLANTIC STATES

*Mycomyia nugatoria*, *M. onusta*, *M. unicolor* and *M. incompta* are known from the females only and are therefore omitted from this key.

1. Fork of Cu below or distad of the base of  $R_s$  ..... 2  
Fork of Cu proximad of the base of  $R_s$  ..... 17
2. Spurs present on the mesothoracic coxæ; usually two scutellar bristles... 3  
Spurs absent; usually four scutellar bristles ..... 6
3. Fore basitarsus longer than its tibia ..... 4  
Fore basitarsus shorter than its tibia ..... *appendiculata* Lw.
4. Petiole of M longer than  $M_3$  ..... *sequax* Joh.  
Petiole of M shorter than  $M_3$  ..... 5
5. Coxal spurs short ..... *imitans* Joh.  
Coxal spurs long; hypopygium figures 7 & 9 ..... *dichaeta* n. sp.
6. Abdomen with two or three spots on each segment; petiole of M shorter than  $M_3$  ..... *biseriata* Lw.  
Abdomen not marked as above; petiole of M equal, shorter than, or longer than  $M_3$  ..... 7
7. Hypopygium as in figure 10 ..... *dentata* n. sp.  
Hypopygium not so ..... 8
8. A dense brush of setæ on the fore coxæ ..... *ornata* Meig.  
No dense brush of setæ on the fore coxæ ..... 9
9. Sc ends in  $R_1$  ..... 10  
Sc ends in C or is free ..... 11
10. Thorax vittate; base of first abdominal segment dusky ..... *littoralis* Say  
Thorax not vittate; hypopygium figure 5 ..... *alternata* n. sp.
11. Petiole of M shorter than  $M_3$  ..... 12  
Petiole of M longer or subequal to  $M_3$  ..... 13
12. Abdomen yellow; posterior third or half of each tergite blackish, sixth and seventh tergites black; 3 to 5 mm. in total length. *brevivittata* Coq.  
Abdomen yellow; tergites black except the wide posterior margin; 6 mm. in total length ..... *mendax* Joh.
13. Dorsum of thorax fuscous black, with black pile; humeri yellowish; scutellum fuscous black ..... *obtruncata* Lw.  
Thorax yellow with dorsal markings ..... 14
14. Dorsum of thorax with distinct black or reddish markings;  $Sc_2$  usually at the middle of cell  $R_1$  ..... 15

- Dorsum of thorax with faint markings;  $Sc_2$  before the middle of cell  $R_1$ ; petiole of M and  $M_3$  subequal ..... *nigricauda* Adams
15. Two scutellar bristles ..... *sigma* Joh.  
Four scutellar bristles ..... 16
16. Mesonotum with two oblique lines which meet at the scutellum; a median stripe and two elongate lateral spots dorsad of the wing bases.  
*obliqua* Say  
Mesonotum with three confluent or subconfluent dusky stripes.  
*tantilla* Say
17. No spurs on the mesothoracic coxæ; fore tibiæ longer than their basitarsi; four scutellar bristles ..... 18  
With spurs present on the mesothoracic coxæ; two or four scutellar bristles ..... 19
18. Thorax yellow; bases of abdominal segments black; total length 5 mm.  
*flavohirta* Coq.  
Thorax dark; hind borders of abdominal segments black, bases yellow; hypopygium figures 4 & 8 ..... *turitella* n. sp.
19. Spurs of the mesothoracic coxæ minute; posterior margins of abdominal tergites black; fore basitarsus longer than its tibia ..... *imitans* Joh.  
Spurs of mesothoracic coxæ long ..... 20
20. Scutellum with four setæ ..... 23  
Scutellum with two setæ ..... 21
21.  $Sc_2$  ends before the center of cell  $R_1$ ; length 3.5 mm.; both anterior and posterior margins of the tergites yellow; hypopygium as in figures 13, 14, 15 ..... *hirticollis* Say  
 $Sc_2$  ends before the center of cell  $R_1$ , sometimes but slightly so; abdomen fuscous with yellow posterior margins ..... 22
22. Fore basitarsus shorter than its tibia; hypopygium as in figures 12 & 13.  
*curvata* n. sp.  
Fore basitarsus longer than its tibia; hypopygium as in figures 20 & 21.  
*scopula* n. sp.
23. Length 6.5 mm.; thorax yellow; three stripes on the mesonotum dark brown, middle one produced cephalad, laterals short, all three confluent posteriorly; hind coxæ infuscated; head infuscated becoming darker near the ocelli ..... *maxima* Joh.  
Not as above ..... 24
24. Coxæ fuscous; hypopygium as in figure 22, its dorsal aspect similar to that of *M. scopula* in figure 20 ..... *parascopula* n. sp.  
Coxæ yellow ..... 25
25. Pleura yellow; scutellum yellow; head infuscated ..... *sequax* Joh.  
Pleura blackish; scutellum blackish; head shining black; hypopygium as in figure 19 ..... *pseudomaxima* n. sp.

The European species, *Mycomyia ornata* Meig., was taken at McLean, New York, in August. The postnotum has the characteristic few bristles and the fore coxæ have the brush-like group

of setæ. There are two types of hypopygia represented. One is like that figured by Edwards (Trans. Lond. Ent. Soc., 1925); this specimen has the fore tibia subequal to the fore basitarsus. The other is like that figured by Dziedzicki (Publications de la Société des sciences de Varsovie III. 1915.) as *Sciophila tumida* Winn.; this specimen has the fore basitarsus longer than its tibia. Edwards suggests that *M. tumida* is a synonym of *M. ornata*. He says: "The male hypopygium shows a certain amount of variation but most of those I have examined agree more or less closely with Dziedzicki's figures of *Mycomyia tumida*. For this reason I think it possible that Dziedzicki has merely figured as *M. ornata* an abnormal or damaged specimen of the same species which he has shown in a different position as *M. tumida*."

Two other North American species have this fore coxal brush, *Mycomyia durus* Garrett and *Mycomyia armata* Garrett.

*Mycomyia hirticollis* has been taken on Cape Breton Island, Nova Scotia, in August. Figures 13, 14, and 15 show the hypopygium of this species; they are included here as there are no published figures of this species.

*Mycomyia sigma* Joh. originally recorded only from North Carolina has been taken at the Wild Flower Preserve, Slaterville, New York, and also at Fillmore Glen, Moravia, New York.

*Mycomyia sequax* Joh. originally recorded from Ithaca, New York, has been taken at Jasper, Alberta.

***Mycomyia pseudomaxima* new species.**

MALE. Length 2.5 mm. Head black; palpi, scape, and base of first flagellar joint yellow; proboscis dusky. Thorax dusky black except the prothorax and the membranous areas surrounding the stigmata and the wing bases. Legs yellow; spurs of the mesothoracic coxæ slender, reaching up to about two thirds the length of the fore coxæ, the tip bearing two minute black teeth; fore tibiæ longer than the fore basitarsi. Halteres yellow. Wings hyaline; Sc ends in C over distal end of cell  $R_1$ ;  $Sc_2$  over middle of cell  $R_1$ ; cell  $R_1$  about twice as long as wide;  $R_{4+5}$  ends nearly at the wing tip; the petiole of M longer than  $M_2$ ; Cu forks below the r-m cross-vein. Abdomen fuscous; venter and the narrow posterior margins of tergites yellow. Hypopygium (superficially like *M. maxima*) as in figure 19.

Holotype taken at Ithaca, New York, May 24, 1934. Type (No. 1411) in the Cornell University Collection.

***Mycomyia parascopula*** new species.

MALE. Length 4 mm. Head black; palpi subfuscous; scape subfuscous (flagellum missing). Thorax mainly fuscous; prothorax yellow with four or five subprominent setæ; mesonotum with three fuscous stripes, the laterals abbreviated anteriorly, the three confluent caudad; scutellum yellowish with four prominent setæ; postnotum and pleura fuscous. Legs yellow; posterior coxæ fuscous; spurs on the mesothoracic coxæ longer than the coxæ, tapering distally to the two black terminal teeth. Wings hyaline; Sc ending in C distad of the middle of cell  $R_1$ ; cell  $R_1$  less than twice as long as wide; petiole of M shorter than  $M_3$ ; C ends at  $R_{4+5}$  at the wing tip; Cu forks proximad of the r-m cross-vein. Halteres yellow. Abdomen fuscous; posterior margins of the tergites yellow. Hypopygium as in figure 22.

Type from Beltsville, Md., Oct. 22, 1915. W. L. McAtee collector. Type (No. 1410) in the Cornell University Collection.

***Mycomyia dictaeta*** new species.

MALE. Length 4 mm. Head brown; proboscis, palpi, scape, and basal joint of flagellum yellow. Thorax mainly yellow; prothorax yellow with two prominent and five smaller setæ on each side; mesonotum with three stripes, a median brown stripe produced to the anterior margin, two lateral brown stripes abbreviated anteriorly, the three stripes confluent posteriorly before the level of the wing bases, the remainder of the mesonotum dark brown; scutellum and postnotum brown, yellow laterally; anepisternites and sternopleurites brown; pleurotergites brown on their ventral and caudal margins; scutellum with two prominent setæ. Legs yellow; distal end of hind coxæ with an oblique line of short setæ on their caudal aspects; mesocoxal spurs long slender tapering gradually to a point which lacks teeth; fore tibiae and fore basitarsi subequal in length. Wings hyaline; C ends at  $R_{4+5}$ ; Sc long ending in C just proximad of the middle of cell  $R_1$ ;  $Sc_2$  over proximal end of cell  $R_1$ ; cell  $R_1$  over twice as long as wide;  $R_{4+5}$  ends at the wing tip; petiole of M less than half as long as  $M_3$ ; Cu forks distad of the r-m cross-vein; indications of a spurious vein between  $R_8$  and M which ends before the wing margin. Abdominal segments brown with broad yellow posterior margins. Hypopygium as in figures 7 and 9.

Type from Fillmore Glen, Moravia, New York, June 28, 1935. Paratypes from the Wild Flower Preserve, Slaterville, New York, and Lick Brook, Ithaca, New York, Oct. 10, 1935. Type (No. 1415) in the Cornell University Collection. Paratypes in my collection.

***Mycomyia scopula*** new species.

MALE. Length 4 mm. Head dark brown; proboscis, palpi, scape, and basal joint of flagellum yellow. Thorax mainly yellow; prothorax yellow with three



to five prominent setæ; mesonotum yellow with three faint stripes, the median one continued anteriorly to the collar, the laterals abbreviated anteriorly; postnotum and sternopleurites slightly infuscated. Legs yellow; fore basitarsi longer than their tibiæ; mesothoracic coxæ with long spurs, each tapering to a black tip. Wings hyaline; C ends at  $R_{4+5}$ ;  $Sc$  long ending in C just beyond the middle of cell  $R_1$ ;  $Sc_2$  just beyond the middle of cell  $R_1$ ; cell  $R_1$  twice as long as wide;  $R_{4+5}$  ending at the wing tip; petiole of M longer than  $M_3$ ; Cu forks below the r-m cross-vein. Abdomen fuscous; venter and narrow posterior margins of the tergites yellow. Hypopygium (superficially like *M. maxima*) as in figure 19.

Holotype taken at Ithaca, New York, May 24, 1934. Type (No. 1411) in the Cornell University Collection.

***Mycomyia turitella* new species.**

MALE. Length 3.5 mm. Head fuscous dorsally; front and lateral portions yellowish; palpi yellow their proximal ends darker; antennæ light brown except the scape and basal flagellar joint which are yellow. Thorax mainly yellow; three confluent stripes on the mesonotum, the median light brown and continued anteriorly to the collar, the laterals abbreviated anteriorly and black in color; lateral portions of the mesonotum above the wing bases and anterior as far as the ends of the lateral stripes fuscous; prothorax and humeri yellow; prothorax with four prominent bristles; scutellum fuscous with four subprominent bristles; postnotum yellow, fuscous caudad; anepisternites, sternopleurites, and pleurosternites fuscous. Coxæ yellow; mesothoracic coxæ without spurs; fore tibiæ longer than fore basitarsi. Halteres yellow. Wings hyaline;  $Sc$  long ending in C over the distal end of cell  $R_1$ ;  $Sc_2$  over the middle of cell  $R_1$ ; C ends at  $R_{4+5}$  before the wing tip; cell  $R_1$  about twice as long as wide; petiole of M shorter than  $M_3$ ; Cu forks proximad of the r-m cross-vein. Abdomen fuscous; bases of tergites yellow. Hypopygium as in figures 4 and 8.

Described from one male collected by W. A. Hoffman at Monticello, Fla., March 8, 1919. Holotype (No. 1408) in the Cornell University Collection.

***Mycomyia curvata* new species.**

MALE. Length 5 mm. Head fuscous; palpi, scape, and basal third of first flagellar joint yellow. Thorax fuscous, prothorax yellow with five subprominent setæ; mesonotum with three narrow confluent yellow stripes, the laterals abbreviated anteriorly; pleura fuscous. Legs yellow; hind coxæ slightly dusky; mesothoracic coxal spurs longer than their coxæ and tapering distally to the two black teeth; the fore basitarsi longer than their tibiæ. Abdomen with six visible abdominal segments; fuscous; with the narrow posterior margins of the segments yellow; venter yellow basally, distad fuscous. Hypopygium subfuscous (figures 12 and 17).

Type collected at Beaver Lake near Jasper, Alberta, August 15, 1934. Paratypes from Beaver Lake and a defective paratype from Katahdin, Maine, August, 1913 (3,000 feet), collected by C. P. Alexander. Type (No. 1414) in the Cornell University Collection.

***Mycomyia alternata*** new species.

MALE. Length 3 mm. Head black; palpi, proboscis, and flagellum black; scape yellow. Thorax yellow; prothorax with three prominent setae; mesonotum without stripes; scutellum with four prominent setae; postnotum subfuscous caudad; pleura yellow, except the subfuscous pleurotergite. Legs yellow; mesothoracic coxae lack spurs; fore tibiae longer than the fore basitarsi. Wings hyaline; Sc ends in  $R_1$  at about the middle of cell  $R_1$ ; C ends at  $R_{4+5}$  before the tip of the wing; cell  $R_1$  about three times as long as wide;  $M_3$  longer than the petiole of M; Cu forks distad of the r-m cross-vein. Halteres yellow. Abdomen yellow; posterior margins of the tergites brown. Hypopygium as in figure 5.

Type from McLean Reservation, McLean, New York. August. Type (No. 1413) in the Cornell University Collection.

***Mycomyia dentata*** new species.

MALE. Length 3.5 mm. Head fuscous; mouth parts, palpi, scape, and base of first flagellar joint yellow. Thorax brown; prothorax with three strong setae; mesonotum with indications of three dark stripes; scutellum with four strong setae. Legs yellow. Halteres yellow. Wings hyaline; Sc ends in  $R_1$  before the middle of cell  $R_1$ ; cell  $R_1$  twice as long as wide;  $Sc_2$  absent; C ends at  $R_{4+5}$  before the wing tip; petiole of M longer than  $M_2$ ; Cu forks distad of the r-m cross-vein. Hypopygium as in figure 10.

Type from Shelburne, N. H., collected by C. P. Alexander. Type (No. 1416) in the Cornell University Collection.

***Mycomyia intermedia*** new species.

MALE. Length 4 mm. Head black; palpi, proboscis, and antennae black except the basal part of the first flagellar joint which is yellow. Thorax black; the three stripes of the mesonotum separated by shining areas; humeri lighter; pleura black; prothorax black with about five prominent setae. Coxae dusky; spurs of the mesothoracic coxae little longer than the trochanters, their bases dark, yellow distad, ending in two black teeth; fore tibiae longer than the fore basitarsi. Wings hyaline with a small black spot at the base of Cu; C ends at  $R_{4+5}$  at the wing tip; Sc ends in C over the proximal end of cell  $R_1$ ;  $Sc_2$  over the proximal end of cell  $R_1$ ; cell  $R_1$  about twice as long as wide; petiole of M shorter than  $M_3$ ; Cu forks just proximad of the r-m cross-vein. Halteres yellow. Abdomen black. Hypopygium as in figure 23.

Type from Fair Oakes, Calif., May 10, 1918. Type (No. 1412) in the Cornell University Collection.

This species is apparently close to *Mycomyia fuscibasis* Van Duzee, but differs in leg proportions and in the hypopygial structure. The antennal bases have less yellow. Sc ends proximad of the middle of cell  $R_1$ . In Johannsen's key it runs down to *M. calcārata*, but is separable from that species by having the petiole of M less than half as long as  $M_1$ ; the spurs of the middle coxæ are less than half the length of the coxæ; cell  $R_1$  more than 1.5 times as long as broad; and the mesonotal stripe is not distinctly divided.

The differences between the new eastern species and other species are shown in the key.

***Docosia paradichroa* new species.**

MALE. Length 4.5 mm. Head and antennæ black; palpi subfuscous, lighter distad. Thorax wholly black, shining. Legs yellow, tarsi are infuscated distally; fore basitarsi shorter than their tibiæ. Halteres yellow. Wings hyaline; Sc ends in  $R_1$ ; r-m cross-vein longer than the stem of M; fork of Cu proximad of the fork of M and proximad of the tip of Sc. Abdomen mainly yellow; sixth segment with diffuse black spot on both tergite and sternite; eight and ninth segments wholly black. Hypopygium (figure 6) black.

Type and three paratype males taken at the Wild Flower Preserve, Slaterville, New York, May, 1935. Feeding on slime flux of maple. Type (No. 1417) in the Cornell University Collection; paratypes in my collection. This species resembles *Docosia dichroa* Loew but differs in the structure of the hypopygium, in lacking the group of numerous black spines on the inner tip of the hind tibia and in possessing two short, black, peg-like spines anterior to the hind tibial spurs.

***Exechia clepsydra* new species.**

MALE. Total length 4.5 mm. Head deep fuscous; palpi, scape, and first flagellar joint yellow. Thorax chiefly fuscous; prothorax yellow with five setæ on each side; mesonotum deep fuscous; pleurotergites with six prominent setæ; scutellum with two small setæ, followed posteriorly by two large setæ; hypopleurite yellow. Legs yellow; fore basitarsi longer than their tibiæ; base of middle and hind femora with an oval brown spot beneath. Wings hyaline; Sc short ending in  $R_1$ ; curvature of  $R_s$  not conspicuous. Halteres yellow. Abdominal tergites mainly fuscous; first tergite with a minute basal yellow triangle; tergite three with lateral yellow spots which cut laterally into the dorsal

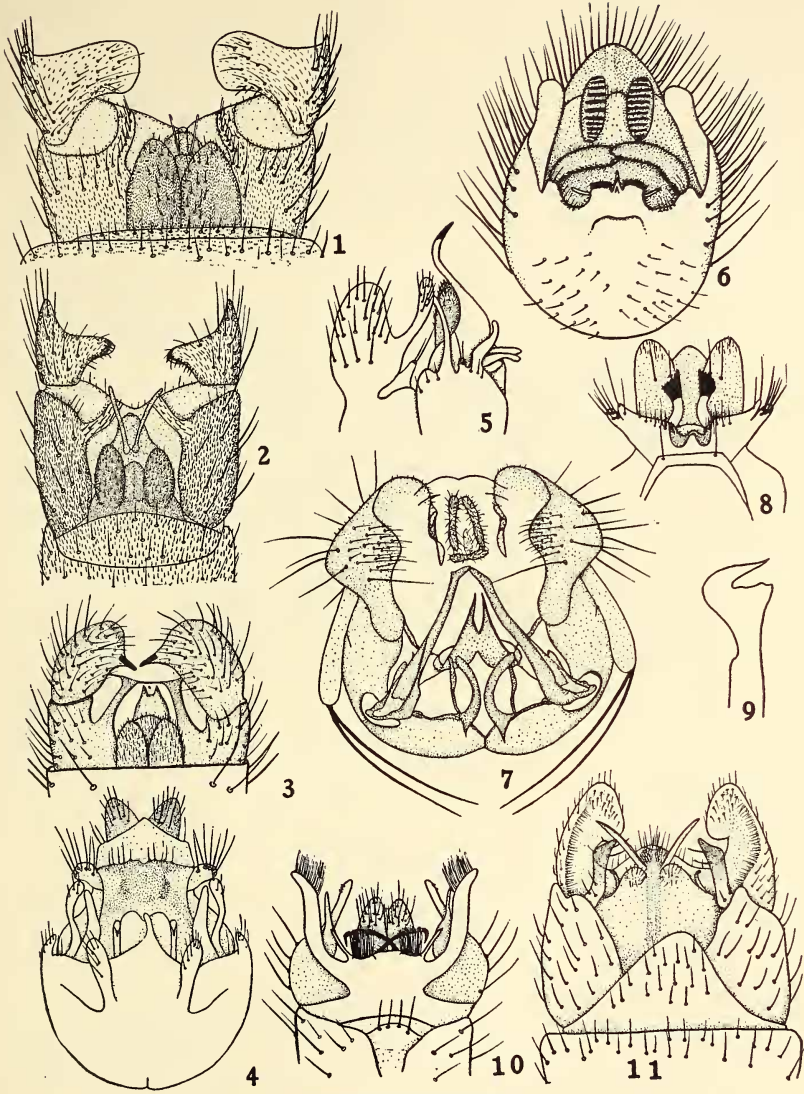
brown making almost an hour-glass shaped mark (hence the specific name). Hypopygium (figure 18) yellow.

Type from Fillmore Glen, New York, Nov. 18, 1934. Type (No. 1419) in the Cornell University Collection. In Johannsen's key this runs down near *E. capillata* and *E. absoluta* but differs greatly in the form of the hypopygium as well as in the color and in leg proportions.

PLATE 29

1. *Bolitophila distus* dorsal\* aspect of hypopygium.
2. *Bolitophila alberta* dorsal aspect of hypopygium.
3. *Bolitophila acuta* dorsal aspect of hypopygium.
4. *Mycomyia turitella* ventral aspect of hypopygium.
5. *Mycomyia alternata* lateral aspect of hypopygium.
6. *Docosia paradichroa* ventral aspect of hypopygium.
7. *Mycomyia dichæta* caudal aspect of hypopygium.
8. *Mycomyia turitella* dorsal aspect of hypopygium.
9. *Mycomyia dichæta* lateral aspect of forceps (styli).
10. *Mycomyia dentata* dorsal aspect of hypopygium.
11. *Platyura pellita* ventral aspect of hypopygium.

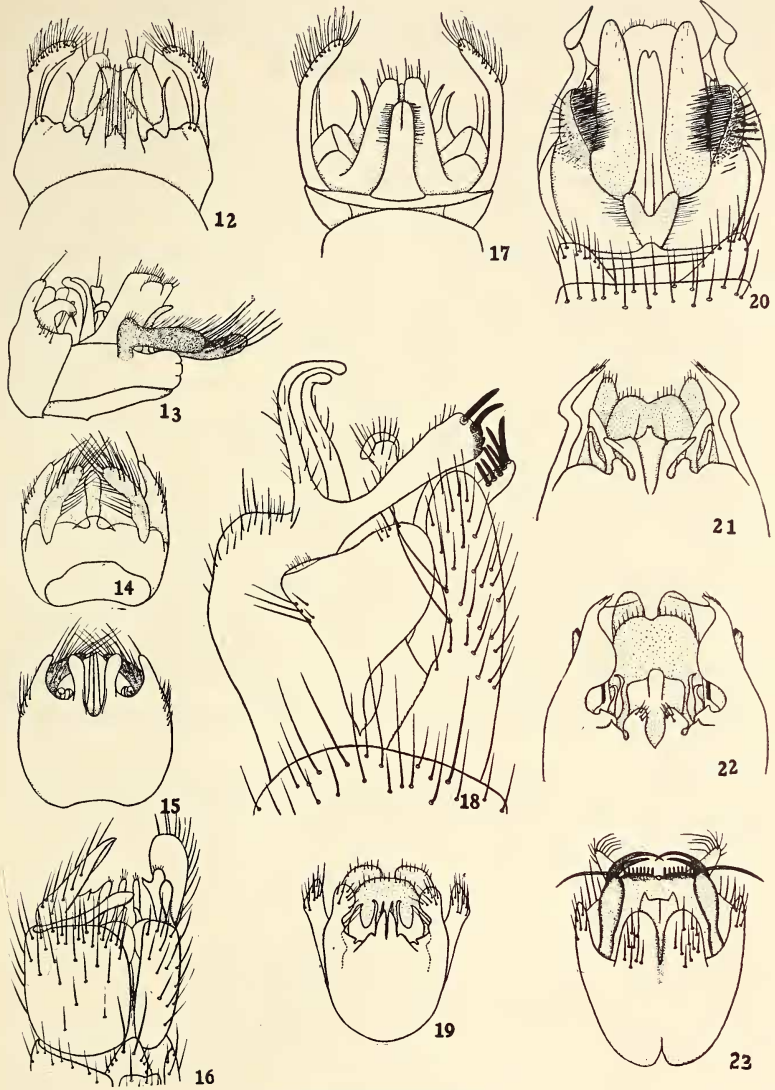
\* Refers to the morphological dorsal, ventral, and lateral aspects and not to the actual aspects which may vary in different individuals.



MYCETOPHILIDÆ

## PLATE 30

12. *Mycomyia curvata* ventral aspect of hypopygium.
13. *Mycomyia hirticollis* lateral aspect of hypopygium.
14. *Mycomyia hirticollis* dorsal aspect of hypopygium.
15. *Mycomyia hirticollis* ventral aspect of hypopygium.
16. *Exechia clepsydra* latero-ventral aspect of hypopygium.
17. *Mycomyia curvata* dorsal aspect of hypopygium.
18. *Neoempheria digitalis* lateral aspect of hypopygium.
19. *Mycomyia pseudomaxima* ventral aspect of hypopygium.
20. *Mycomyia scopula* dorsal aspect of hypopygium.
21. *Mycomyia scopula* ventral aspect of hypopygium.
22. *Mycomyia parascopula* ventral aspect of hypopygium.
23. *Mycomyia intermedia* ventral aspect of hypopygium.



MYCETOPHILIDÆ